

# **CSE 259 - Logic in Computer Science (Spring 2024)**

## **Recitation-11**

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# Project-4

- You need to listen a song called **I'm My Own Grandpa**, summarize claims in the song and write Prolog program to verify them.
- Facts in the song and the relevant kinship definition rules **must be included**.

# Project-4: Song details

## I'm My Own Grandpa

**Lyrics:** Dwight Latham, Moe Jaffe

**Music:** Dwight Latham, Moe Jaffe

Covered by Jerry Garcia with David Grisman

Hip-hop version by Queue Luu Breeze

**Song:** <https://www.youtube.com/watch?v=eYIJH81dSiw>

# Project-4: Song lyrics

Oh, many, many years ago  
When I was twenty-three  
I was married to a widow  
Who was pretty as can be

This widow had a grown-up daughter  
Who had hair of red  
My father fell in love with her  
And soon the two were wed

This made my dad my son-in-law  
And changed my very life  
For my daughter was my mother  
Cause she was my father's wife

To complicate the matter  
Though it really brought me joy  
I soon became the father  
Of a bouncing baby boy

This little baby then became  
A brother-in-law to dad  
And so became my uncle  
Though it made me very sad

For if he was my uncle  
Then that also made him brother  
Of the widow's grown-up daughter  
Who of course is my step-mother

My father's wife then had a son  
Who kept them on the run  
And he became my grandchild  
For he was my daughter's son

My wife is now my mother's mother  
And it makes me blue  
Because although she is my wife  
She's my grandmother too

Now if my wife is my grandmother  
Then I'm her grandchild  
And every time I think of it  
It nearly drives me wild

For now I have become  
The strangest case you ever saw  
As husband of my grandma  
I am my own grandpa

[Chorus]  
I'm my own grandpa  
I'm my own grandpa  
It sounds funny I know  
But it really is so  
Oh, I'm my own grandpa

# Project-4: Project description

- **Minimize** the number of facts and **maximize** the number of rules.
- Some predicate name you may want to use:  
grandparent/grandmother/grandfather/parent/father/mother/sibling/brother/sister/  
uncle/son/daughter/grandchild/son\_in\_law/spouse
- Sample testing cases:
  - runIt :- daughter(redhair,i), mother(redhair,i), son\_in\_law(dad,i),  
brother(baby, dad), uncle(baby,i), brother(baby,redhair), grandchild(onrun,i),  
mother(widow,redhair), grandmother(widow,i), grandchild(i,widow),  
grandfather(i,i).

# Project-4: Sample output

```
yes  
| ?- runIt.
```

```
Is redhair the daughter of i ? : true  
Is redhair the mother of i ? : true  
Is dad the son in law of i ? : true  
Is baby the brother of dad ? : false  
Is baby the uncle of i ? : true  
Is baby the brother of redhair ? : true  
Is onrun the grandchild of i ? : true  
Is widow the mother of redhair ? : true  
Is widow the grandmother of i ? : true  
Is i the grandchild of widow ? : true  
Is i the grandfather of i ? : true
```

```
Is John his own grandfather ? : true
```

```
yes  
| ~
```

# Project-4: Writeup

- The write up is like a project report.
- Introduction (provide an overview 1-2 paragraphs)
- Background (Some background details of the project and your implementation. 1-2 paragraphs)
- Implementation (design and coding paradigms. 2 - 4 paragraphs)
- Testing (test cases and expected output 1- 3 paragraphs)
- Conclusion (summary 1 paragraph)
- Do not make it more than (a maximum of) 3 pages in text.

# Project-4: Writeup contd.

- Some explanation, introduction. What is your understanding to the song or/and to your implementation.
- What are the facts you implemented? Who (entities) are involved in the facts?
- What are the rules you wrote? What kind of relationship you implemented?
- What is the main query you want us to run during test, and what is the expected output?



# Project-4: Sample writeup

This program is based on the "I'm My Own Grandpa" by the artist Ray Stevens.

In the song he explains the complications of how he becomes the grandparent to himself.

The code has pre-written the kinship relationship rules that has been listed in the song.

```
/*facts*/
```

The program defines

```
two spouse facts: spouse(i,widow), and spouse(dad,redhair),
```

```
two female facts: widow, redhair,
```

```
four male facts: i, dad, onrun, baby,
```

```
and
```

```
four children facts: child(redhair,widow), child(i,dad), child(onrun,dad),  
child(baby,i).
```

```
/*rules*/
```

The rules of the program have been written to define

in what condition is someone a child, a parent, a grandparent and other relations.

Rules have been made using if statements where the predicate argument is followed by the condition in which they are true.

The rules are defined in different sections: parents, children, siblings,

# Project-4: What to submit

- The pl file
- A readme with team information and contribution of each members
- A report